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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,225	06/25/2001	Shunpei Yamazaki	07977/279001/US5023/5025	1969

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FISH & RICHARDSON P.C.
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
SONG, MATTHEW J	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
07/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/892,225	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	MATTHEW J. SONG	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *15-19,29-31,35,36,39-46,49-54,57-68,71-76 and 95-100* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-19,29-31,35,36,39-46,49-54,57-68,71-76 and 95-100* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/9/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 15-19, 29-31, 35-36, 39-46, 49-54, 57-68, 71-76, and 95-100 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-127 of U.S. Patent No. 6,913,956 ('956) in view of Burghartz et al (US 5,461,250). '956 claims a method of forming an amorphous semiconductor film; adding a catalytic element; conducing a first heat treatment; forming a semiconductor film containing a rare gas element; moving the catalytic element to the semiconductor film containing the rare gas element by a second heat treatment (claim 1). The second heat treatment is defined in the specification to be a heat treatment conducted in a nitrogen atmosphere (col 11, ln 30-55). '956 does not claim a first and

second amorphous semiconductor film or a gate insulating film on the second crystalline semiconductor film.

In a method of forming a SiGe thin film transistor device, note entire reference, Burghartz et al teaches forming and patterning a bottom gate electrode; growing a bottom gate insulator; depositing a thin amorphous Si layer; depositing a SiGe channel layer thereon; depositing a Si layer on the SiGe layer; performing a recrystallization of the SiGe and Si layers; and growing a top gate insulator after recrystallization (Fig 1 and Fig 4). Burghartz et al also teaches the SiGe layer has a concentration of Ge of about 10-50%, which overlaps applicant's claimed range of 0.1-10%, and overlapping ranges are held to be prima facie obvious (MPEP 2144.05). Burghartz et al also teaches recrystallization of amorphous SiGe and Si layers (col 7, ln 55-67 and col 8, ln 60-65).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify '956 using the semiconductor layer taught by Burhartz et al to form a useful SiGE TFT (col 5, ln 30-65).

3. Claims 15-19, 29-31, 35-36, 39-46, 49-54, 57-68, 71-76, and 95-100 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-70 of U.S. Patent No. 7,115,453 in view of Burghartz et al (US 5,461,250). '453 claims a method of forming an amorphous semiconductor film; adding a material to promote crystallization; conducing a first heat treatment; forming a semiconductor film containing a rare gas element; performing gettering through a second heating process thereby moving the metal to the second semiconductor film containing a rare gas element (claim 1). Gettering is defined in

the specification to be a heat treatment conducted in a nitrogen atmosphere (col 10, ln 35-55). '453 does not claim a first and second amorphous semiconductor film or a gate insulating film on the second crystalline semiconductor film.

In a method of forming a SiGe thin film transistor device, note entire reference, Burghartz et al teaches forming and patterning a bottom gate electrode; growing a bottom gate insulator; depositing a thin amorphous Si layer; depositing a SiGe channel layer thereon; depositing a Si layer on the SiGe layer; performing a recrystallization of the SiGe and Si layers; and growing a top gate insulator after recrystallization (Fig 1 and Fig 4). Burghartz et al also teaches the SiGe layer has a concentration of Ge of about 10-50%, which overlaps applicant's claimed range of 0.1-10%, and overlapping ranges are held to be prima facie obvious (MPEP 2144.05). Burghartz et al also teaches recrystallization of amorphous SiGe and Si layers (col 7, ln 55-67 and col 8, ln 60-65).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify '453 using the semiconductor layer taught by Burhartz et al to form a useful SiGE TFT (col 5, ln 30-65).

4. Claims 15-19, 29-31, 35-36, 39-46, 49-54, 57-68, 71-76, and 95-100 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-70 of U.S. Patent No. 7,052,943 in view of Burghartz et al (US 5,461,250). '943 claims a method of forming an amorphous semiconductor film with a metal element; crystallizing the first amorphous semiconductor layer; forming a second semiconductor film containing a rare gas element; and moving the metal to the second semiconductor film (claim 1). The moving of the

metal to the second semiconductor film is accomplished, as defined in the specification, by a heat treatment conducted in a nitrogen atmosphere (col 11, ln 20-60 and col 12, ln 45-55). '943 does not claim a first and second amorphous semiconductor film or a gate insulating film on the second crystalline semiconductor film.

In a method of forming a SiGe thin film transistor device, note entire reference, Burghartz et al teaches forming and patterning a bottom gate electrode; growing a bottom gate insulator; depositing a thin amorphous Si layer; depositing a SiGe channel layer thereon; depositing a Si layer on the SiGe layer; performing a recrystallization of the SiGe and Si layers; and growing a top gate insulator after recrystallization (Fig 1 and Fig 4). Burghartz et al also teaches the SiGe layer has a concentration of Ge of about 10-50%, which overlaps applicant's claimed range of 0.1-10%, and overlapping ranges are held to be prima facie obvious (MPEP 2144.05). Burghartz et al also teaches recrystallization of amorphous SiGe and Si layers (col 7, ln 55-67 and col 8, ln 60-65).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify '943 using the semiconductor layer taught by Burhartz et al to form a useful SiGE TFT (col 5, ln 30-65).

Response to Arguments

5. Applicant's arguments filed 4/9/2008 have been fully considered but they are not persuasive.

Applicant's argument that Burghartz does not teach forming a first amorphous film that including silicon and germanium on an insulating surface and then forming a second amorphous

semiconductor film that including silicon on the first film is noted but not found persuasive. Applicant alleges Burghartz does not teach "on" and applicant's interpretation of "on" means in direct contact, however Applicant does not define "on" to mean in direct contact. The Examiner interprets "on" in its broadest reasonable interpretation which would be that a layer may be "on" another layer while still having intervening layers. Schetzina (US 5,670,798) is evidence that the Examiner's interpretation is a reasonable interpretation. Schetzina teaches a method of layering semiconductors and it will be understood by those having skill in the art that when a layer is formed "on" another layer, it may be formed directly on the other layer, or one or more intervening layers may be present. (col 11, ln 40-55). Burghartz teaches a bottom gate insulator **114**, forming a Si layer **106**, then forming a SiGe layer **102** and a top Si layer **104** and performing recrystallization on layers **102-106** (Fig 4). The SiGe layer **102** is still "on" the insulator layer **114** despite the intervening layer **106**.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. SONG whose telephone number is (571)272-1468. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on 571-272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Matthew J Song
Examiner
Art Unit 1792

MJS
June 27, 2008
/Michael Kornakov/
Supervisory Patent Examiner, Art Unit 1792